

**REMARKS/ARGUMENTS**

Claims 1-9 and 11-21 now stand in the present application, claims 1, 2, 4-8, 11 and 14 having been amended, claim 10 having been canceled and new claims 15-21 having been added. Reconsideration and favorable action is respectfully requested in view of the above amendments and the following remarks.

In the Office Action, the Examiner has objected to claims 2, 8 and 10 for a number of informalities. As noted above, claims 2 and 8 have been amended in part to correct the deficiency pointed out by the Examiner with respect to those claims and claim 10 has been canceled. More particularly, claim 8 has been amended to more clearly recite that the "insulative region for reducing the capacitance of the element includes a region below the first electrode or the pad electrode." Support for the amendment to claim 8 can be found in the present application at page 15, lines 15-20, page 21, lines 3-16 and in particular at lines 8-9 and 12-13. Accordingly, the Examiner's objection to the claims is believed to have been overcome.

The Examiner has rejected claim 10 under 35 U.S.C. § 102(b) as being anticipated by Kubota et al. As noted above, claim 10 has been canceled and accordingly the Examiner's rejection of this claim is believed to be moot.

The Examiner has rejected claims 1-4, 6-9 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Kawagoe in view of Norihiro et al. Applicants respectfully traverse the Examiner's § 103 rejection of these claims.

As noted above, independent claims 1, 2, 4, 11 and 14 have been substantially amended to add the limitation "the insulative region being present remote from at least a portion of an edge of the semiconductor stacked structure when viewed in plan."

Support for these amendments can be found in the present application at Figures 2B and 8-10 and the accompanying description in the present specification at page 20, line 23 to page 21, line 2. In addition, Applicants amended these claims to recite "semiconductor stacked structure" which is supported in the present application by Figures 1-4 and 7 and the accompanying text in the present specification.

In Applicants' invention, the insulative region exists not only apart from the waveguide region but also apart from the edge of the semiconductor stacked structure when viewed in plan. As is described in the present specification at page 55, lines 5-14, the insulative region is provided apart from the waveguide region in consideration of the migration by heat diffusion of the atoms which are introduced by ion implantation. Typically, a semiconductor layer changes its crystal structure by ion implantation and, therefore, it is not possibly cleaved in the desired direction when the elements are divided. However, in Applicants' invention the insulative region is provided apart from the edge of the semiconductor stacked structure so that there is a region into which ions are not implanted between elements adjacent to each other, and it can be cleaved in such region in the desired direction when dividing the elements.

Kawagoe does not describe or even suggest that the insulative region is provided for reducing the capacitance of the element. Indeed the Examiner admits that Kawagoe lacks this teaching. See Office Action at page 4.

Norihiro discloses converting the electrical resistance in the electric current narrowing layer into a higher resistance by ion implantation. However, Norihiro does not disclose or suggest that the insulative region is provided apart from the waveguide region and from the edge of the semiconductor stacked structure, as now required by

the present claims. In Norihiro, the high electrical resistance layer is region 8 which is indicated by broken lines in Figures 1 and 2. As is indicated in Figure 2(a), the region 8 is formed by providing striped providing striped SiO<sub>2</sub> film 11 on a part of contact layer 7 formed on p-InP clad layer 6, and implanting oxygen ions I using SiO<sub>2</sub> film 11 as a mask. Therefore, the region 8 is formed in all of the regions except those masked by striped SiO<sub>2</sub> film 11 when viewed in a plan.

Since the cited references taken singly or in combination do not teach or suggest this feature of Applicants' invention, claims 1-4, 6-9 and 14 are believed to patentably define thereover.

The Examiner has also rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Kawagoe in view of Norihiro and Komori et al. Applicants respectfully traverse the Examiner's § 103 rejection of claim 5.

Komori does not disclose or suggest that the insulative region is provided apart from the waveguide region and from the edge of the semiconductor stacked structure. Accordingly, Komori does not solve the deficiencies noted above with respect to Kawagoe and Norihiro and accordingly, claim 5 is also believed to patentably define over the cited references taken either singly or in combination.

The Examiner has also rejected claims 11-13 as being unpatentable over Kawagoe in view of Nagashima et al. Applicants respectfully traverse the Examiner's § 103 rejection of claims 11-13.

In Nagashima, current blocking portion 23 includes current blocking layer 29 which is directed contacted to mesa stripe portion 22. Nagashima does not disclose or suggest that the insulative region is provided apart from the waveguide region and from

the edge of the semiconductor stacked structure. Thus, Nagashima does not solve the deficiency noted above with respect to Kawagoe and accordingly, claims 11-13 are also believed to patentably define over the cited references taken either singly or in combination.

As noted above, Applicants have added new claims 15-21. The newly added claim 15 comprises a portion of claim 8 and the newly added claim 16 is fully supported by, *inter alia*, Figures 2B and 8-10 and the corresponding description in the present specification at page 45, lines 6-7. Accordingly, these newly added claims are also believed to be in condition for allowance.

Therefore, in view of the above amendments and remarks, it is respectfully requested that the application be reconsidered and that all of claims 1-9 and 11-21, now standing in the application, be allowed and that the case be passed to issue. If there are any other issues remaining which the Examiner believes could be resolved through either a supplemental response or an Examiner's amendment, the Examiner is respectfully requested to contact the undersigned at the local telephone exchange indicated below.

KITANO et al  
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Respectfully submitted,

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